CDC

April 10, 1998 / Vol. 47 / No. 13

MMWR™

MORBIDITY AND MORTALITY WEEKLY REPORT

253 Tuberculosis Morbidity — United States, 1997

257 Suicide Prevention Evaluation in a Western Athabaskan American Indian Tribe — New Mexico, 1988–1997

261 Rift Valley Fever — East Africa, 1997–1998

Tuberculosis Morbidity — United States, 1997

During 1997, a total of 19,855 cases of tuberculosis (TB) (7.4 cases per 100,000 population) were reported to CDC from the 50 states and the District of Columbia, representing a 7% decrease from 1996 (*1*) and a 26% decrease from 1992, when the number of cases peaked during the resurgence of TB in the United States. This report summarizes national TB surveillance data for 1997 and compares it with similar data for previous years. The findings indicate that, although the overall number of TB cases continued to decrease, trends in the number of reported cases and TB case rates differed by geographic area and population characteristics.

In 1997, six states (California, Florida, Illinois, New Jersey, New York, and Texas) reported 57% of all TB cases (Table 1). Since 1992, the number of cases reported from each of these states decreased substantially. Cases of TB remained concentrated in urban areas: in 1997, 40% of TB cases were reported from 64 major cities. The four largest of these cities (i.e., New York, Los Angeles, Chicago, and Houston) reported an overall decrease in total cases during 1992–1997.

During 1992–1997, the overall decrease in TB cases primarily reflected the substantial decline in cases among U.S.-born persons in all age groups (Table 2). The number of cases among foreign-born persons increased 6% during this period, reflecting a small increase among adults aged 25–44 years, a larger increase among adults aged ≥45 years, and a substantial decline among children aged <15 years.

The proportion of TB cases among foreign-born persons has increased steadily since the mid-1980s (Figure 1) and increased markedly since 1992 (from 27% in 1992 to 39% in 1997). The TB case rate for foreign-born persons has remained at least four to five times higher than that for U.S.-born persons.

During 1997, the percentage of TB cases for which drug-susceptibility results for initial *Mycobacterium tuberculosis* isolates were reported was 84% (13,386 of 15,986 culture-positive cases). Of the 42 states that reported drug-susceptibility results for at least 75% of culture-positive cases, 963 (7.6%) isolates were resistant to at least isoniazid, and 171 (1.3%) were resistant to at least isoniazid and rifampin (i.e., multidrug-resistant TB [MDR-TB]). Of these 42 states, 27 reported at least one MDR-TB case; however, 47% of all MDR-TB cases were reported from New York (n=47) and California (n=34).

Information about the human immunodeficiency virus (HIV) status of persons with TB reported to the national surveillance system is limited. In 1997, only 3485 (50%) of

Tuberculosis Morbidity — Continued

TABLE 1. Number of reported tuberculosis cases, percentage change in number of cases, and case rates,* by state and year — United States, 1992 and 1997

State	No. cases		% Change from 1992 to 1997	Case rate	
	1992	1997		1992	1997
Alabama	418	405	– 3%	10.1	9.4
Alaska	57	78	37%	9.7	12.8
Arizona	259	296	14%	6.8	6.5
Arkansas	257	200	–22%	10.7	7.9
California	5,382	4,059	–25%	17.4	12.6
Colorado	104	94	–10%	3.0	2.4
Connecticut	156	128	–18%	4.8	3.9
Delaware	55	39	–29%	8.0	5.3
District of Columbia	146	110	–25%	24.8	20.8
Florida	1,707	1,400	–18%	12.7	9.6
Georgia	893	696	–22%	13.2	9.3
Hawaii	273	167	–39%	23.5	14.1
Idaho	26	15	–42%	2.4	1.2
Illinois	1,270	974	–23%	10.9	8.2
Indiana	247	168	–32%	4.4	2.9
Iowa	49	74	51%	1.7	2.6
Kansas	56	78	39%	2.2	3.0
Kentucky	402	199	–50%	10.7	5.1
Louisiana	373	406	9%	8.7	9.3
Maine	24	21	–13%	1.9	1.7
Maryland	442	340	–23%	9.0	6.7
Massachusetts	428	268	–37%	7.1	4.4
Michigan	495	374	–24%	5.2	3.8
Minnesota	165	161	– 2%	3.7	3.4
Mississippi	281	245	–13%	10.7	9.0
Missouri	245	248	1%	4.7	4.6
Montana	16	18	13%	1.9	2.0
Nebraska	28	22	–21%	1.7	1.3
Nevada	99	112	13%	7.5	6.7
New Hampshire	18	17	– 6%	1.6	1.4
New Jersey	984	718	–27%	12.6	8.9
New Mexico	88	71	–19%	5.6	4.1
New York	4,574	2,265	–50%	25.2	12.5
North Carolina	604	463	–23%	8.8	6.2
North Dakota	11	12	9%	1.7	1.9
Ohio	358	286	–20%	3.2	2.6
Oklahoma	216	212	– 2%	6.7	6.4
Oregon	145	161	11%	4.9	5.0
Pennsylvania	758	528	–30%	6.3	4.4
Rhode Island	54	38	–30%	5.4	3.9
South Carolina	387	328	–15%	10.7	8.7
South Dakota	32	19	–41%	4.5	2.6
Tennessee	527	467	–11%	10.5	8.7
Texas	2,510	1,992	–21%	14.2	10.2
Utah	78	36	–54%	4.3	1.7
Vermont	7	6	–14%	1.2	1.0
Virginia	457	350	–23%	7.2	5.2
Washington	306	305	0	6.0	5.4
West Virginia	92	54	–41%	5.1	3.0
Wisconsin	106	130	23%	2.1	2.5
Wyoming	8	2	–75%	1.7	0.4
Total	**26,673**	**19,855**	**–26%**	**10.5**	**7.4**

* Per 100,000 population.

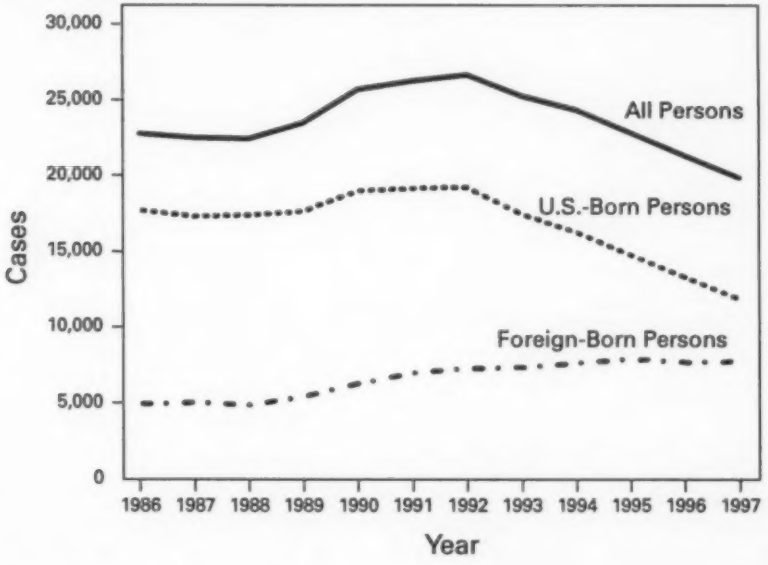
Tuberculosis Morbidity — Continued

TABLE 2. Number of persons with reported cases of tuberculosis and percentage change in number of cases, by country of birth, age group, and year — United States, 1992 and 1997

Age group (yrs)	Country of birth: United States — No. reported cases 1992	United States — No. reported cases 1997	United States — % Change from 1992 to 1997	Other — No. reported cases 1992	Other — No. reported cases 1997	Other — % Change from 1992 to 1997
0–14	1,285	961	–25%	411	291	–29%
15–24	908	565	–38%	1,047	1,094	4%
25–44	7,363	3,753	–49%	3,007	3,070	2%
45–64	4,888	3,376	–31%	1,557	1,851	19%
≥65	4,750	3,198	–33%	1,244	1,429	15%
Total*	**19,194**	**11,853**	**–38%**	**7,266**	**7,735**	**6%**

*Persons for whom age was not stated were excluded (seven in 1997, 35 in 1992).

FIGURE 1. Number of persons with reported cases of tuberculosis, by country of birth — United States, 1986–1997



Tuberculosis Morbidity — Continued

6915 TB case reports for persons aged 25–44 years included information about HIV status, and only 15 states reported HIV test results for at least 75% of cases in persons in this age group. Of these 15 states, the percentage of TB cases in persons aged 25–44 years who were coinfected with HIV ranged from zero (North Dakota and South Dakota) to 48% (Florida). Reporting of HIV status has improved slowly since 1993, the year such information was first included on TB case reports submitted to CDC. In 1993, information about HIV status was reported for 33% of TB cases in persons aged 25–44 years, and six states reported this information for at least 75% of cases among persons in this age group (*2*).

Reported by: Div of Tuberculosis Elimination, National Center for HIV, STD, and TB Prevention, CDC.

Editorial Note: The findings in this report highlight several important trends in reported cases of TB in the United States. First, for the fifth consecutive year, the total number of reported cases decreased. Second, declines during 1992–1997 were sustained in states reporting the largest number of TB cases, particularly within major urban communities. Third, the overall decline in reported TB cases reflected a substantial decrease in cases among U.S.-born persons and a small increase in the number of cases among foreign-born persons.

The decline in the overall number of reported TB cases has been attributed to stronger TB-control programs that emphasize promptly identifying persons with TB, initiating appropriate therapy, and ensuring completion of therapy (*3*). The resulting decline in cases among U.S.-born persons probably reflected reduced community transmission of *M. tuberculosis*, particularly in areas with a high incidence of acquired immunodeficiency syndrome (AIDS). In comparison, the relatively stable number of cases among foreign-born persons indicated that most cases of active TB disease among foreign-born persons residing in the United States result from infection with *M. tuberculosis* in the person's country of birth (*4*).

To reduce active TB disease among foreign-born persons residing in the United States, CDC, in collaboration with state and local health departments, is developing a comprehensive plan that will include strategies to improve case finding and prevention activities. However, not all foreign-born persons have the same risk for active TB disease. For example, persons from countries with established market economies and most former socialist countries of Europe are at low risk for active TB disease and may benefit least from screening (*4*).

Two important factors in the resurgence of TB in the United States during the late 1980s were the HIV/AIDS epidemic and the emergence of MDR-TB. Because incomplete reporting has limited analysis of national TB surveillance data by HIV status, state health departments have compared TB and AIDS registries to help estimate the proportion of reported TB cases with HIV coinfection. In the most recent registry comparison conducted by the 50 states and Puerto Rico, 14% of all TB cases (27% of cases in persons aged 25–44 years) reported during 1993–1994 had a match in the AIDS registry (*5*). Both this study and recent TB surveillance data indicate that the impact of the HIV/AIDS epidemic also differs by geographic location (*5,6*).

HIV-infected persons are at high risk for active TB disease after infection with *M. tuberculosis*. Thus, reducing community transmission of *M. tuberculosis* by promptly identifying and treating persons who have infectious TB is an important first step in preventing further TB disease among HIV-infected persons. The next steps include

Tuberculosis Morbidity — Continued

promptly identifying HIV-infected contacts of persons with infectious TB and ensuring that contacts who may be infected with *M. tuberculosis* complete appropriate preventive therapy. Other important strategies include screening for *M. tuberculosis* infection among persons with recently identified HIV infection, ensuring completion of preventive therapy among those with *M. tuberculosis* infection, and periodic monitoring and education of those who are not infected with *M. tuberculosis* (*7,8*).

Outbreaks of MDR-TB, particularly among HIV-infected persons, contributed to the resurgence of TB in the late 1980s and early 1990s. Since CDC began monitoring anti-TB drug resistance through the national TB surveillance system in 1993, levels of isoniazid resistance have been relatively stable, and the number and proportion of MDR-TB cases has decreased (*9*). Nevertheless, 43 states and the District of Columbia reported at least one MDR-TB case during 1993–1997. All health departments should be prepared to promptly identify persons who have active TB disease, to ensure that standards of care are met with respect to diagnosis and treatment (including prompt initiation and completion of therapy), and to identify and appropriately treat those who may have been infected through close contact with persons who have infectious TB.

References

1. CDC. Tuberculosis morbidity—United States, 1996. MMWR 1997;46:695–700.
2. CDC. Reported tuberculosis in the United States, 1993. Atlanta: US Department of Health and Human Services, CDC, 1994.
3. McKenna MT, McCray E, Jones JL, Onorato IM, Castro KG. The fall after the rise: tuberculosis in the United States, 1991 to 1994. Am J Public Health (in press).
4. Zuber PLF, McKenna MT, Binkin NJ, Onorato IM, Castro KG. Long-term risk of tuberculosis among foreign-born persons in the United States. JAMA 1997;278:304–7.
5. Moore M, McCray E, Onorato IM. The proportion of U.S. TB cases with a match in the AIDS registry [Abstract]. Am J Respir Crit Care Med 1997;155:23.
6. CDC. Reported tuberculosis in the United States, 1996. Atlanta: US Department of Health and Human Services, CDC, 1997.
7. CDC. 1997 USPHS/IDSA guidelines for the prevention of opportunistic infections in persons infected with human immunodeficiency virus. MMWR 1997;46(no. RR-12):10–12.
8. CDC. Anergy skin testing and preventive therapy for HIV-infected persons: revised recommendations. MMWR 1997;46(no. RR-15).
9. Moore M, Onorato IM, McCray E, Castro KG. Trends in drug-resistant tuberculosis in the United States, 1993–1996. JAMA 1997;278:833–7.

Suicide Prevention Evaluation in a Western Athabaskan American Indian Tribe — New Mexico, 1988–1997

Since 1979, suicide and homicide have alternated as the second and third leading causes of death* among young American Indians and Alaska Natives (AI/ANs). From 1979 through 1992, suicide rates for AI/ANs in all age groups were approximately 1.5 times the rates for the overall U.S. population. During 1991–1993, suicide rates for AI/ANs aged 15–24 and 25–34 years were 31.7 and 26.6 per 100,000 population, respectively; males aged 15–34 years accounted for 64% of all AI/AN suicides (*1*). In the overall U.S. population during 1991–1993, the rates for persons in these same age

*The leading cause of death has been injury resulting from motor-vehicle crashes.

Suicide Prevention — Continued

groups were 13.0 and 14.5, respectively (*2*). Since 1980, suicide has been either the second or third leading cause of death for persons aged 15–24 years in the overall U.S. population (*3*). Although knowledge about suicide among AI/ANs has increased (*4*), information about the efficacy of suicide prevention and intervention programs in general, and specifically in AI/AN communities, is scarce. In January 1990, following concern raised by tribal officials in 1988 about suicide among youth, a Western Athabaskan tribe in rural New Mexico implemented a suicide prevention and intervention program that targeted tribal members aged 15–19 years (*5,6*). This report summarizes the results of the program through 1997 and indicates that rates of suicide and attempted suicide among this target population decreased substantially after the program was implemented.

From 1988 to 1997, the tribal population increased from 2762 to 3225. The population of tribal members aged 15–19 years increased similarly, from 283 to 328. Ninety percent of the population lived on the reservation, primarily in the one reservation town. Approximately 80% of persons aged ≥16 years were unemployed, with some seasonal variation (Western Athabaskan Tribe, unpublished data, 1998).

The prevention and intervention program included previously unavailable services for the entire community. CDC guidelines for containing suicide clusters (*7*) and developing suicide prevention programs among adolescents and young adults (*8*) were incorporated into program activities.

School-based "natural helpers," comprising 10–25 youth per year, were trained to respond to young persons in crisis and to notify mental health professionals of the need for assistance. Natural helpers also provided education in both the school and community on alcohol and drug prevention, self-esteem and team building, and suicide prevention. Prevention of alcohol abuse, child abuse, and violence between intimate partners was included in the program because these behaviors have been associated with suicidal behavior (*4*). Other program components included outreach to families after a suicide or traumatic death or injury, immediate response and follow-up for reported at-risk youth, community education about suicide prevention, and suicide-risk screening in mental health and social service programs.

A surveillance form developed by IHS in 1988 was revised and used by local professional staff to collect information about suicide completions and attempts. Attempts included both self-inflicted injuries requiring medical or other intervention to prevent death and injuries that may have required medical intervention but were not potentially lethal. Program staff assessed all persons who made suicide attempts. Information about suicide completions was obtained from police records, health clinic records, tribal emergency medical services records, and family and community members. Rates of suicidal acts before and after program implementation for persons aged 15–19 years were compared to assess program effectiveness.

Demographic information obtained about persons who committed a suicidal act included age, sex, marital status, tribe, employment, education, and living arrangements. Other pertinent information collected included method used, number of previous suicidal acts, location of suicidal act, alcohol and/or substance abuse, family history of suicidal behaviors, loss of job, break-up with or death of a significant other, and suicide of a friend.

During 1988–1997, a total of 118 persons in all age groups accounted for 237 suicidal acts (i.e., all suicide completions and attempts). Sixty-four (54.2%) of these

Suicide Prevention — Continued

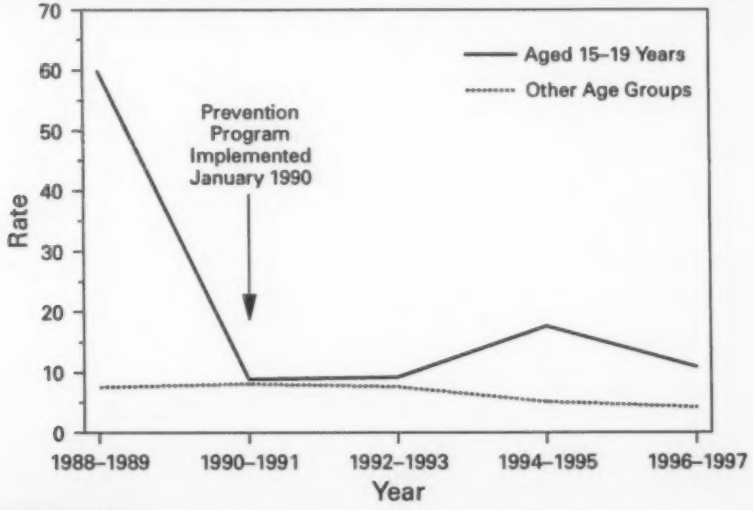
persons had previously exhibited suicidal behaviors; 165 (69.6%) of all acts involved alcohol use. Of all suicidal acts, 15 (6.3%) resulted in death; all suicide completions were among males. The ratio of suicidal attempts to suicidal completions was 14.8:1. Males accounted for more attempts than females (114 males, 108 females). Of all these suicidal acts, 61 (25.7%) occurred among persons aged 15–19 years.

Rates of suicidal acts for persons aged 15–19 years and for all other age groups were calculated in 2-year intervals for rate stability (Figure 1). The numbers of suicide completions were too small to calculate separate rates by age group. During 1988–1989 (i.e., before program implementation), the suicidal act rate for persons aged 15–19 years was 59.8 (n=34) per 1000 population, compared with 7.5 (n=38) per 1000 for all other age groups. During 1990–1991, the rate for persons aged 15–19 years decreased to 8.9 (n=5) per 1000 population. This rate increased slightly to 9.2 (n=5) during 1992–1993, rose to 17.6 (n=10) during 1994–1995, and decreased to 10.9 (n=7) during 1996–1997. Although rates varied after implementation of the program, they remained substantially lower than before the program was initiated. During these same time periods, rates for all other age groups demonstrated considerably less variation.

Reported by: Western Athabaskan Tribe. P Serna, MSW, American Indian/Alaska Native Suicide Prevention Center and Network; PA May, PhD, Univ of New Mexico, Albuquerque, New Mexico. M Sitaker, MPH, Office of Epidemiology and Assessment, The Combined Health District of Montgomery County, Dayton, Ohio. Indian Health Service, Albuquerque, New Mexico. Div of Violence Prevention, National Center for Injury Prevention and Control, CDC.

Editorial Note: Since this program was implemented in 1990, rates of suicidal acts substantially decreased for members of the Western Athabaskan tribe aged

FIGURE 1. Rates* of suicidal acts† for persons aged 15–19 years compared with persons of all other age groups, by year§ — Western Athabaskan Tribe, 1988–1997



*Per 1000 population.
†Includes suicidal attempts and completions.
§Rates calculated in 2-year intervals for rate stability.

Suicide Prevention — Continued

15–19 years. Aspects of the program that possibly contributed to the decrease in rates included multiple prevention and intervention strategies within a centralized population and full-time program staff dedicated to suicide prevention and intervention. A decrease in suicidal behaviors coincident with community education and heightened screening suggests an actual program effect. This decrease in suicidal behaviors occurred despite consistent surveillance and heightened community education about suicide prevention.

The results of the program evaluation are subject to three limitations. First, the program was not implemented simultaneously in a comparison group or population, which made determination of program effectiveness difficult. Second, it could not be determined which program prevention components were associated with the reduction in suicidal acts. Finally, during 1958–1987, Athabaskan tribes in New Mexico demonstrated a cyclical increase and decrease in the rate of suicide completions every 5–6 years (*9*). An analysis of suicide prevalence rates since 1987 for other Athabaskan tribes in New Mexico will be necessary to compare populations who have not implemented suicide prevention activities and to determine 1) whether cyclical patterns of suicide completions have continued in Athabaskan tribes, 2) whether the suicide prevention program was implemented during a downward cycle or has had the suggested impact in reducing suicidal behaviors, and 3) whether patterns of suicide completions (i.e., excluding nonfatal suicidal acts) adequately measure the success of local prevention programs.

Additional research is needed to determine both risk and protective factors for suicide and the reasons for higher suicide rates in some AI/AN communities. Sociocultural factors that might be involved include the availability of employment and educational opportunities, the role of alcohol in AI/AN communities, community history of suicidal behavior, and loss or maintenance of traditional spiritual practices and indigenous languages.

During 1993–1994, suicide prevention activities in this community were expanded to include persons aged 20–24 years. Further evaluation will be necessary to determine the effect of the program on persons in this age group. CDC guidelines for prevention of suicide among adolescents and young adults suggest avoiding reliance on any one strategy (*8*). Additional investigation is necessary to determine which strategies are most effective in preventing suicidal behavior among AI/ANs. The suicide prevention program in this American Indian community underscores the value of consistent surveillance to track trends in suicidal behaviors and assess program effects. Replication and evaluation of similar programs are needed to further develop effective suicide prevention strategies for adolescents and young adults.

References

1. Wallace LJD, Calhoun AD, Powell KE, O'Neil J, James SP. Homicide and suicide among Native Americans 1979–1992. Atlanta: US Department of Health and Human Services, CDC, 1996. (Violence surveillance summary series, no. 2).
2. Indian Health Service. Trends in Indian health. Rockville, Maryland: US Department of Health and Human Services, Indian Health Service, Department of Planning, Evaluation, and Legislation, 1996.
3. CDC. Leading causes of death, 1980–1995. Atlanta: US Department of Health and Human Services, CDC, 1997.

Suicide Prevention — Continued

4. May PA, McClosky J. Suicide and suicide attempts among American Indians and Alaska Natives: an annotated bibliography. 3rd ed. Albuquerque: University of New Mexico, Center on Alcoholism, Substance Abuse and Addictions, 1997.
5. May PA, Del Vecchio A. National model adolescent suicide prevention project: Western Athabaskan Tribe—final report for the Office of Planning, Evaluation and Legislation, Indian Health Service. Albuquerque: University of New Mexico, 1994.
6. DeBruyn LM, May PA, Sitaker M. Suicide intervention and prevention: evaluation of community based programs in three American Indian communities—final report. Atlanta: US Department of Health and Human Services, CDC, 1997.
7. CDC. CDC recommendations for a community plan for the prevention and containment of suicide clusters. MMWR 1988;37(no. S-6).
8. CDC. Programs for the prevention of suicide among adolescents and young adults. MMWR 1994;43(no. RR-6):1–7.
9. May PA, Van Winkle NW. An update on American Indian suicide in New Mexico, 1980–1987. Human Organization 1993;52:304–14.

Rift Valley Fever — East Africa, 1997–1998

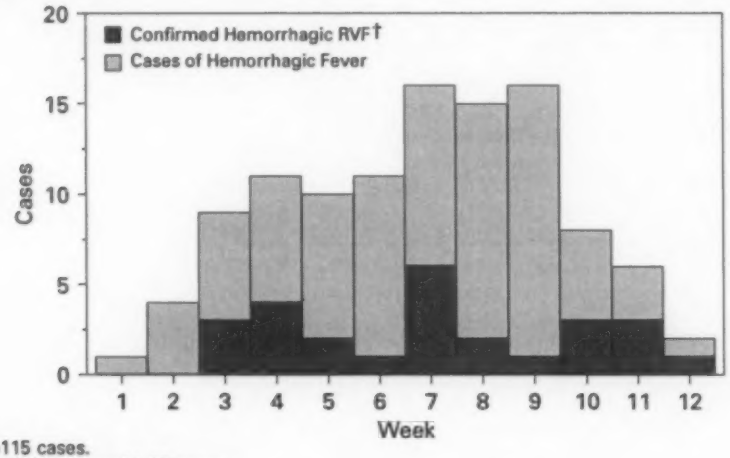
In December 1997, the Kenya Ministry of Health and the World Health Organization (WHO) in Nairobi received reports of 478 unexplained deaths in the North Eastern province of Kenya and southern Somalia. Clinical features included acute onset of fever and headache associated with hemorrhage (hematochezia, hematemesis, and bleeding from other mucosal sites). Local health officials also reported high rates of illness and death resulting from hemorrhage among domestic animals in the area. This report describes the preliminary results of the outbreak investigation and the results of a serologic survey.

From late October 1997 through January 1998, torrential rains occurred in most of East Africa, resulting in the worst flooding in the region since 1961 and rainfall that was 60–100 times the seasonal average (National Climatic Data Center, unpublished data, 1998). Diagnostic testing of the initial 36 specimens received at the National Institute of Virology, South Africa, and at CDC confirmed acute infection with Rift Valley fever (RVF) virus in 17 (47%) persons from whom specimens were obtained; confirmation was made by detection of IgM antibodies, virus isolation, reverse-transcriptase-polymerase chain reaction for viral nucleic acid, or immunohistochemistry.

Active surveillance conducted by WHO, the Kenya Ministry of Health, and international relief organizations during December 22–28 in 18 villages (population: 200,000) in Garissa district, North Eastern province, Kenya, identified 170 deaths resulting from a "bleeding disease." Severe flooding and large distances between settlements complicated case ascertainment and subsequent evaluation. Despite these constraints, the surveillance system received reports and blood specimens for 231 cases of unexplained severe febrile illness with onset from November 25, 1997, through February 14, 1998. Of the 231 reported cases, 115 met the case definition for hemorrhagic fever (i.e., fever and mucosal or gastrointestinal bleeding). Of the 115 patients with hemorrhagic fever, 58% were male (median age: 30 years [range: 3–85 years]); diagnostic testing demonstrated acute RVF viral infection in 27 (23%) (Figure 1). Of the 116 persons whose illnesses did not meet the case-definition for hemorrhagic fever, 26 (22%) had acute infection with RVF virus. Of these 26 persons, 14 had symptoms compatible with complications of RVF viral infection, including nine with neurologic

Rift Valley Fever — Continued

FIGURE 1. Temporal distribution of hemorrhagic fever cases,* by date of onset and etiologic diagnosis — Kenya and southern Somalia, November 25, 1997–February 14, 1998



*N=115 cases.
†Rift Valley fever. N=27 cases.

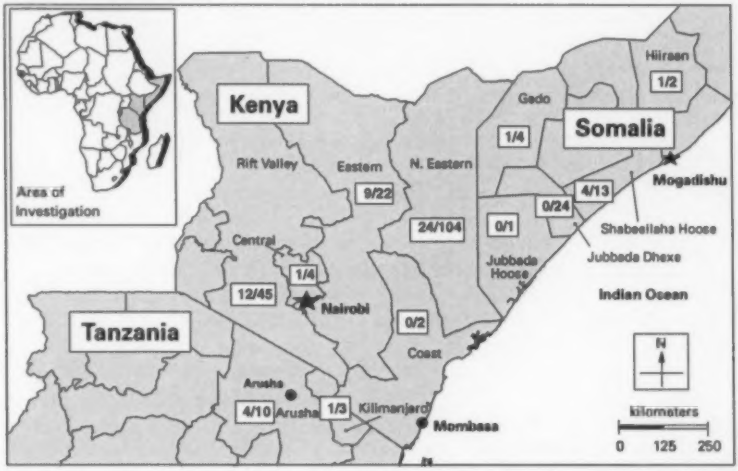
disease and five with visual disturbances. In addition to the confirmed RVF cases in the North Eastern province and the Gedo, Hiran, and Lower Shabeelle provinces of Somalia, acute confirmed RVF cases were identified in the Central (one case), Eastern (nine cases), and Rift Valley (12 cases) provinces of Kenya (Figure 2).

Studies conducted during this outbreak included human, livestock, and entomologic sampling. Using a multistage cluster sampling strategy based on the population distribution in Garissa district, an international task force led by the Kenya Ministry of Health conducted a cross-sectional study to examine risk factors and determine the prevalence of recent infection with RVF virus. Anti-RVF virus IgM was detected by enzyme-linked immunosorbent assay in 18 (9%) of the 202 persons in the sample; all 18 had recently been ill, compared with 80% of the seronegative persons ($p=0.05$). The study did not identify statistically significant differences in the frequency of IgM antibody by sex or age. However, contact with livestock (e.g., herding, milking, slaughtering, and sheltering animals in the home) was statistically associated with serologic evidence of acute infection with RVF virus ($p<0.01$).

In this cross-sectional survey, livestock owners reported losses of approximately 70% of their sheep and goats and 20%–30% of cattle and camels. Other infections contributing to the high mortality in the epizootic included nonspecific pneumonia, pasteurellosis, contagious caprine pleuropneumonia, contagious pustular dermatitis, bluetongue, and complications of mange and foot rot (Field Mission of the Food and Agriculture Organization of the United Nations, unpublished data, 1998). RVF serologic results from animal samples collected by veterinary staff in this and other regions of Kenya are pending.

Rift Valley Fever — Continued

FIGURE 2. Geographic distribution of Rift Valley fever outbreak* — East Africa, 1997–1998



*Numbers in boxes indicate number of confirmed cases / number of cases with severe febrile illness reported to surveillance systems.

In February 1998 in Garissa district, 3180 mosquitoes from three trapping sites were collected. Three of the nine captured species have been previously implicated in RVF transmission (*Anopheles coustani, Mansonia africana,* and *M. uniformis*). Viral isolation studies are under way.

Reported by: Kenya Ministries of Health and Agriculture; Virus Research Center, Kenyan Medical Research Institute; African Medical Relief Foundation; International Federation of Red Cross and Red Crescent; Somalia Aid Coordinating Board, Nairobi, Kenya. Ministries of Health and Agriculture, Dar es Salaam, Tanzania. Univ of Pretoria, Onderstepoort; National Institute of Virology, Sandringham, South Africa. Médècins Sans Frontières International; European Programme for Intervention Epidemiology (EPIET), European Union. EPICENTRE; Médècins du Monde, Paris, France. Emergency Prevention System, Food and Agriculture Organization, Rome, Italy. World Health Organization Country Offices for Kenya, Somalia, and Tanzania; African Regional Office, Harare, Zimbabwe. Div of Emerging and other Communicable Disease Surveillance and Control; World Health Organization, Geneva, Switzerland. US Army Medical Research Unit-Kenya. US Naval Medical Research Unit No. 3, Cairo, Egypt. Health Studies Br, Div of Environmental Hazards and Health Effects, National Center for Environmental Health; Meningitis and Special Pathogens Br, Div of Bacterial and Mycotic Diseases, Div of Vector-Borne Infectious Diseases, Infectious Diseases Pathology Activity and Special Pathogens Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; and EIS Officers, CDC.

Editorial Note: In Kenya in 1930, RVF virus was first isolated and recognized as the etiologic agent for a zoonotic disease associated with substantial perinatal mortality and abortions in livestock (*1*). RVF outbreaks historically occurred in sub-Saharan Africa until 1977–1978, when an estimated 18,000 human infections and 598 deaths were officially reported in Egypt. In addition, during this outbreak, most pregnant ewes aborted and most lambs died (*2*).

Rift Valley Fever — Continued

Epizootics occur periodically after heavy rains that flood natural depressions, which enables hatching of the primary vector and reservoir (*Aedes* sp. mosquitoes). High levels of viremia in animals lead to infection of secondary arthropod vector species and virus amplification in livestock with collateral infection of humans. As noted in this outbreak, transmission of RVF virus to humans also can occur by contact with blood or body fluids from viremic animals. Disease in humans usually is a mild, febrile illness; however, 1%–2% of infections may result in fatal hemorrhagic fever or encephalitis. Vascular retinitis with permanent partial loss of vision develops in a higher percentage of patients.

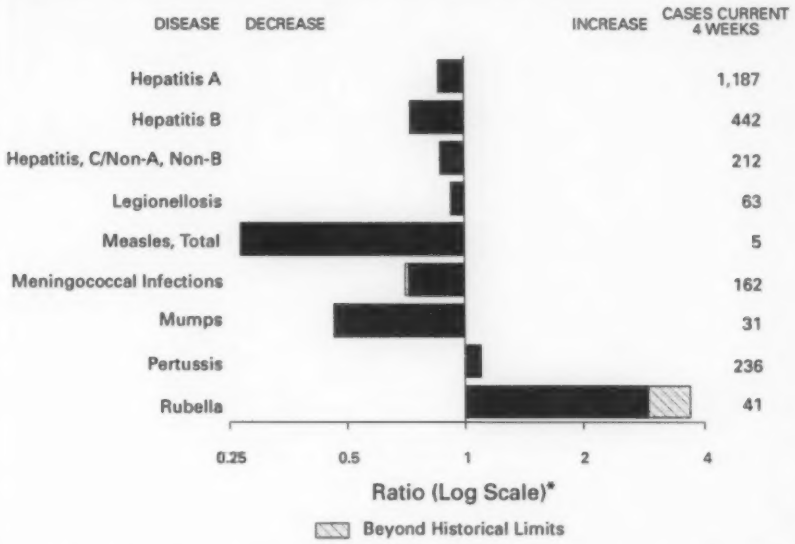
The magnitude of infection and economic loss from the outbreak described in this report is difficult to gauge. Preliminary estimates of deaths among animals and humans suggest this may be the largest reported outbreak of RVF in East Africa and the first recorded in Somalia (*3*). On the basis of an estimated antibody prevalence of 9% and the assumption that all persons residing in the North Eastern province and southern Somalia were at risk for infection, an estimated 89,000 humans in this region could have been infected. This does not include infected persons in the rest of Kenya and neighboring countries. Preliminary laboratory results have confirmed other viral agents, malaria, *Shigella* dysentery, and leptospirosis as explanations for some of the reported illnesses that met the case definition for hemorrhagic fever but were seronegative for RVF virus. Other possible explanations for the cases of fever with hemorrhage that were negative for RVF virus include an extremely sensitive case definition, inadequate samples, and other pathogens, toxins, and complications of malnutrition. Ongoing investigations may help define the magnitude and identify additional etiologic agents associated with this outbreak.

Satellite and precipitation data document widespread high levels of rainfall with increases in vegetation during the same period in previous years; these conditions support transmission of RVF virus throughout Kenya and the surrounding countries. This is consistent with reports of confirmed cases from at least four provinces in Kenya (North Eastern, Eastern, Central, and Rift Valley), southern Somalia, and northern Tanzania. Deaths resulting from acute hemorrhagic fever among humans and abortions among livestock also have been reported from bordering countries, although no specimens have been available for diagnostic testing. The extent of RVF virus transmission and the probability of recurring outbreaks in East Africa emphasize the necessity of developing and validating methods to predict, prevent, and treat RVF (*4*). Longitudinal studies are required to validate remote sensing satellite data and to target areas for animal vaccination and vector control, enhance surveillance activities for RVF in animals and humans, and enable prospective entomologic studies.

References

1. Peters CJ, Linthicum KJ. Rift Valley fever. In: Beran GW, ed. Handbook series of zoonoses, section B: viral zoonoses. 2nd ed. Boca Raton, Florida: CRC Press, 1994:125–38.
2. Meegan JM. Rift Valley fever epizootic in Egypt: description of the epizootic and virological studies. Trans R Soc Trop Med Hyg 1979;73:618–23.
3. WHO Hemorrhagic Fever Task Force. Rift Valley fever outbreaks in East Africa. Presented at the International Conference on Emerging Infectious Diseases, Atlanta, March 8–12, 1998.
4. Linthicum KJ, Bailey CL, Davies FG, Tucker CJ. Detection of Rift Valley fever activity in Kenya by satellite remote sensing imagery. Science 1987;235:1656–9.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending April 4, 1998, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending April 4, 1998 (13th Week)

	Cum. 1998		Cum. 1998
Anthrax	-	Plague	-
Brucellosis	4	Poliomyelitis, paralytic[¶]	-
Cholera	-	Psittacosis	10
Congenital rubella syndrome	1	Rabies, human	-
Cryptosporidiosis*	454	Rocky Mountain spotted fever (RMSF)	14
Diphtheria	-	Streptococcal disease, invasive Group A	472
Encephalitis: California*	-	Streptococcal toxic-shock syndrome*	16
eastern equine*	-	Syphilis, congenital**	10
St. Louis*	-	Tetanus	3
western equine*	-	Toxic-shock syndrome	28
Hansen Disease	26	Trichinosis	1
Hantavirus pulmonary syndrome*†	-	Typhoid fever	69
Hemolytic uremic syndrome, post-diarrheal*	4	Yellow fever	-
HIV infection, pediatric*§	72		

-:no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update March 29, 1998.
¶One suspected case of polio with onset in 1998 has also been reported to date.
**Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending April 4, 1998, and March 29, 1997 (13th Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997
UNITED STATES	12,103	16,275	121,224	111,619	184	68	73,741	69,492	765	680
NEW ENGLAND	320	461	4,609	4,428	24	10	1,216	1,507	10	19
Maine	8	18	224	235	1	-	13	12	-	-
N.H.	13	4	236	200	5	2	26	41	-	2
Vt.	8	10	86	112	-	-	2	15	-	1
Mass.	98	217	2,143	1,860	10	8	532	600	10	16
R.I.	32	43	626	535	3	-	81	137	-	-
Conn.	161	169	1,294	1,486	5	-	562	702	-	-
MID. ATLANTIC	3,425	5,115	15,894	13,954	13	5	9,072	8,857	97	61
Upstate N.Y.	425	845	N	N	10	-	1,208	1,461	83	43
N.Y. City	1,936	2,636	8,925	7,501	-	3	4,074	3,636	-	-
N.J.	580	1,068	1,833	2,583	3	2	1,469	1,786	-	-
Pa.	484	566	5,136	3,870	N	-	2,321	1,974	14	18
E.N. CENTRAL	995	1,213	20,952	17,443	30	9	14,702	10,509	103	171
Ohio	169	251	6,036	5,585	10	-	3,651	3,533	5	5
Ind.	261	283	2,499	2,028	6	3	1,630	1,409	2	2
Ill.	376	369	5,660	2,748	10	-	4,602	1,439	5	22
Mich.	143	248	5,392	4,321	4	2	4,294	3,005	91	134
Wis.	46	62	1,365	2,761	N	4	525	1,123	-	8
W.N. CENTRAL	215	367	7,720	7,797	24	10	3,331	3,147	82	35
Minn.	32	54	1,399	1,853	9	4	488	619	-	-
Iowa	11	51	923	1,245	2	-	248	314	7	8
Mo.	101	194	2,927	2,789	4	5	1,700	1,574	73	21
N. Dak.	3	3	215	244	1	1	18	15	-	2
S. Dak.	7	2	392	273	-	-	68	29	-	-
Nebr.	26	28	721	371	3	-	287	115	-	-
Kans.	35	35	1,143	1,022	5	-	522	481	2	4
S. ATLANTIC	3,235	4,151	24,570	20,899	32	8	20,176	21,115	42	49
Del.	40	51	621	-	-	1	357	266	-	-
Md.	334	435	1,740	1,682	9	4	1,981	3,217	3	5
D.C.	266	244	N	N	-	-	882	1,173	-	-
Va.	231	302	2,945	2,827	N	3	1,947	2,281	1	4
W. Va.	30	21	677	854	N	-	179	250	2	1
N.C.	217	218	5,752	4,441	6	-	4,744	4,059	7	17
S.C.	187	211	4,405	3,142	1	-	2,847	2,761	-	12
Ga.	371	529	4,420	2,070	2	-	4,005	2,924	8	-
Fla.	1,559	2,140	4,010	5,883	4	-	3,234	4,184	21	10
E.S. CENTRAL	444	472	10,008	8,002	13	3	9,630	8,323	28	79
Ky.	65	48	1,608	1,584	2	-	918	1,079	-	4
Tenn.	144	200	3,261	2,941	7	3	2,802	2,540	25	40
Ala.	119	129	2,619	1,851	4	-	3,284	2,680	3	4
Miss.	116	95	2,520	1,626	-	-	2,626	2,024	-	31
W.S. CENTRAL	1,370	1,463	15,270	14,033	2	-	9,678	9,427	9	59
Ark.	52	58	916	632	1	-	1,083	1,098	-	1
La.	212	239	2,813	1,527	-	-	2,442	1,542	-	42
Okla.	71	86	2,304	1,865	1	-	1,285	1,250	-	2
Tex.	1,035	1,080	9,237	10,009	-	-	4,868	5,537	9	14
MOUNTAIN	389	461	4,585	5,834	15	8	1,759	1,898	201	77
Mont.	10	12	223	186	1	-	11	11	4	3
Idaho	8	8	444	389	2	-	38	25	58	14
Wyo.	1	9	187	110	-	-	10	14	92	25
Colo.	65	128	-	778	2	1	658	519	9	12
N. Mex.	55	35	1,004	1,017	5	3	180	331	18	14
Ariz.	128	122	2,255	2,347	N	2	779	758	-	5
Utah	35	35	332	308	3	-	35	38	10	1
Nev.	87	112	140	719	2	2	48	204	10	3
PACIFIC	1,710	2,572	17,616	19,229	41	15	4,177	4,709	193	130
Wash.	137	175	2,640	2,298	10	3	465	541	5	6
Oreg.	40	97	771	1,180	9	7	128	168	2	1
Calif.	1,499	2,267	13,332	15,045	22	3	3,428	3,773	151	79
Alaska	11	16	492	340	-	-	75	124	1	-
Hawaii	23	17	381	366	N	2	81	103	34	44
Guam	-	-	8	113	N	-	2	13	-	-
P.R.	460	264	U	U	1	U	85	150	1	18
V.I.	13	16	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	-	-	N	N	N	U	7	8	-	2

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update March 29, 1998.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending April 4, 1998, and March 29, 1997 (13th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998*	Cum. 1997	Cum. 1998
UNITED STATES	241	208	838	767	232	308	1,648	2,172	1,316	3,500	1,621
NEW ENGLAND	11	15	138	170	9	9	17	40	55	77	313
Maine	1	1	-	1	1	-	1	-	U	5	46
N.H.	2	2	5	4	1	1	-	-	2	1	32
Vt.	-	2	2	2	-	-	-	-	1	-	15
Mass.	4	6	39	29	7	7	14	18	42	39	87
R.I.	4	1	15	19	-	1	-	-	10	5	25
Conn.	-	3	77	115	-	-	2	22	U	27	108
MID. ATLANTIC	53	34	529	490	67	74	60	99	110	595	395
Upstate N.Y.	16	7	298	48	19	9	3	14	U	65	265
N.Y. City	6	1	-	36	32	45	9	18	U	324	U
N.J.	2	5	3	119	8	15	14	46	110	128	50
Pa.	29	21	228	287	8	5	34	21	U	78	80
E.N. CENTRAL	81	88	21	9	14	28	231	190	62	396	13
Ohio	42	41	20	5	1	1	49	66	5	89	13
Ind.	15	10	1	3	1	3	49	42	U	30	-
Ill.	5	4	-	1	5	11	85	17	57	196	-
Mich.	14	24	-	-	6	11	38	22	U	56	-
Wis.	5	9	U	U	1	2	10	43	U	25	-
W.N. CENTRAL	17	16	6	2	9	7	43	50	47	102	135
Minn.	1	-	1	-	4	3	-	13	U	31	29
Iowa	-	1	4	-	2	1	-	2	U	10	29
Mo.	8	6	-	1	1	3	33	22	42	37	9
N. Dak.	-	1	-	-	-	-	-	-	U	2	31
S. Dak.	-	1	-	-	-	-	-	-	4	2	14
Nebr.	6	5	-	1	-	-	4	-	-	-	-
Kans.	2	2	1	-	2	-	6	13	U	20	23
S. ATLANTIC	41	21	101	71	64	65	649	864	226	535	605
Del.	6	2	-	12	1	2	6	7	-	8	17
Md.	8	10	86	50	21	23	121	243	62	48	132
D.C.	2	1	4	4	3	5	23	31	27	19	-
Va.	3	1	2	-	6	13	52	79	30	86	161
W. Va.	N	N	1	-	-	-	-	2	17	11	21
N.C.	4	3	1	2	6	4	207	182	90	63	136
S.C.	4	1	-	1	-	3	85	103	U	52	34
Ga.	-	-	2	1	12	9	96	155	U	95	43
Fla.	14	3	5	1	15	6	59	62	U	153	61
E.S. CENTRAL	4	8	10	14	6	7	322	489	-	262	58
Ky.	1	-	-	1	-	1	34	34	U	37	11
Tenn.	3	3	5	2	4	2	160	198	U	95	33
Ala.	-	2	5	-	2	1	69	114	U	84	14
Miss.	-	3	-	11	-	3	59	123	U	46	-
W.S. CENTRAL	-	1	-	1	3	5	178	339	22	513	46
Ark.	-	-	-	-	-	1	30	37	22	29	1
La.	-	-	-	-	3	3	82	111	-	22	-
Okla.	-	1	-	-	-	1	11	32	U	40	45
Tex.	-	-	-	1	-	-	55	159	U	422	-
MOUNTAIN	15	14	1	-	13	16	57	40	62	104	38
Mont.	1	-	-	-	-	1	-	-	2	2	13
Idaho	-	1	-	-	1	-	-	-	2	1	-
Wyo.	1	1	-	-	-	1	-	-	1	1	24
Colo.	4	4	-	-	4	8	4	-	U	20	-
N. Mex.	1	-	-	-	5	2	-	-	7	5	-
Ariz.	1	3	-	-	2	1	50	33	39	49	1
Utah	6	4	-	-	1	-	2	1	11	4	-
Nev.	1	1	1	-	-	3	1	6	U	22	-
PACIFIC	19	11	32	10	47	97	91	81	732	916	18
Wash.	1	2	1	-	1	1	4	5	U	68	-
Oreg.	-	-	1	3	6	6	2	1	U	27	-
Calif.	18	8	30	7	40	90	85	74	681	746	11
Alaska	-	-	-	-	-	-	-	-	10	24	7
Hawaii	-	1	-	-	-	-	-	1	41	51	-
Guam	-	-	-	-	-	-	-	2	-	13	-
P.R.	-	-	-	-	-	2	73	56	-	-	18
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	1	2	8	-	-

N: Not notifiable U: Unavailable -: no reported cases

*Additional information about areas displaying "U" for cumulative 1998 Tuberculosis cases can be found in Notice to Readers, *MMWR* Vol. 47, No. 2, p. 39.

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending April 4, 1998, and March 29, 1997 (13th Week)

Reporting Area	*H. influenzae*, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
	Cum. 1998*	Cum. 1997	Cum. 1998	Cum. 1997	Cum. 1998	Cum. 1997	1998	Cum. 1998	1998	Cum. 1998	Cum. 1998	Cum. 1997
UNITED STATES	275	299	4,156	6,627	1,610	2,109	-	1	1	7	8	20
NEW ENGLAND	14	17	75	153	13	49	-	-	-	1	1	-
Maine	2	2	9	10	-	3	-	-	-	-	-	-
N.H.	1	2	5	8	4	3	-	-	-	-	-	-
Vt.	2	-	4	4	-	1	-	-	-	-	-	-
Mass.	9	12	15	84	6	27	-	-	-	1	1	-
R.I.	-	1	5	9	3	4	-	-	-	-	-	-
Conn.	-	-	37	38	-	11	-	-	-	-	-	-
MID. ATLANTIC	38	39	235	592	220	331	-	-	1	1	1	8
Upstate N.Y.	16	1	92	45	77	51	-	-	-	-	-	3
N.Y. City	7	18	67	316	51	141	-	-	-	-	-	4
N.J.	14	12	2	88	-	63	-	-	-	-	-	1
Pa.	1	8	74	143	92	76	-	-	1	1	1	-
E.N. CENTRAL	43	46	574	857	188	441	-	-	-	1	1	4
Ohio	21	22	99	127	22	27	-	-	-	-	-	-
Ind.	5	4	65	67	18	26	-	-	-	-	-	-
Ill.	16	14	79	235	26	87	-	-	-	-	-	3
Mich.	-	6	308	372	118	142	-	-	-	1	1	1
Wis.	1	-	23	56	4	159	-	-	-	-	-	-
W.N. CENTRAL	11	9	471	461	100	148	-	-	-	-	-	1
Minn.	4	2	15	27	6	3	-	-	-	-	-	-
Iowa	1	2	227	61	15	7	-	-	-	-	-	-
Mo.	2	2	176	267	64	124	-	-	-	-	-	1
N. Dak.	-	-	2	4	1	-	-	-	-	-	-	-
S. Dak.	-	2	2	5	1	-	-	-	-	-	-	-
Nebr.	-	-	10	17	2	6	-	-	-	-	-	-
Kans.	4	1	39	80	11	8	-	-	-	-	-	-
S. ATLANTIC	70	56	472	370	261	231	-	1	-	4	5	-
Del.	-	-	-	9	-	1	-	-	-	-	-	-
Md.	15	23	102	96	37	43	-	-	-	1	1	-
D.C.	-	-	15	11	3	17	-	-	-	-	-	-
Va.	9	2	73	39	25	16	-	-	-	2	2	-
W. Va.	2	2	-	5	1	6	-	-	-	-	-	-
N.C.	8	7	27	55	65	58	-	-	-	-	-	-
S.C.	1	3	8	27	-	17	-	-	-	-	-	-
Ga.	17	15	111	38	59	13	-	-	-	1	1	-
Fla.	18	4	136	90	71	60	-	1	-	-	1	-
E.S. CENTRAL	16	15	98	151	121	154	-	-	-	-	-	1
Ky.	-	2	-	23	-	7	-	-	-	-	-	-
Tenn.	11	10	68	72	98	101	-	-	-	-	-	-
Ala.	5	3	30	30	23	20	-	-	-	-	-	1
Miss.	-	-	-	26	-	26	-	-	-	-	-	-
W.S. CENTRAL	16	12	243	990	88	115	-	-	-	-	-	-
Ark.	-	1	12	47	17	15	-	-	-	-	-	-
La.	7	1	8	52	8	23	U	-	U	-	-	-
Okla.	8	8	114	436	14	7	-	-	-	-	-	-
Tex.	1	2	109	445	49	70	-	-	-	-	-	-
MOUNTAIN	47	37	828	1,042	213	215	-	-	-	-	-	-
Mont.	-	-	7	32	2	1	-	-	-	-	-	-
Idaho	-	-	54	46	9	7	-	-	-	-	-	-
Wyo.	-	1	15	13	5	5	-	-	-	-	-	-
Colo.	9	5	70	126	27	47	-	-	-	-	-	-
N. Mex.	-	2	48	68	89	68	-	-	-	-	-	-
Ariz.	30	12	545	447	49	44	-	-	-	-	-	-
Utah	4	3	47	226	17	29	-	-	-	-	-	-
Nev.	4	14	42	84	15	14	-	-	-	-	-	-
PACIFIC	20	68	1,160	2,021	406	425	-	-	-	-	-	6
Wash.	1	-	159	136	33	14	-	-	-	-	-	-
Oreg.	17	13	91	111	29	35	-	-	-	-	-	-
Calif.	-	52	900	1,718	339	365	-	-	-	-	-	3
Alaska	1	1	2	12	2	7	-	-	-	-	-	-
Hawaii	1	2	8	42	3	4	-	-	-	-	-	3
Guam	-	-	-	-	-	1	U	-	U	-	-	-
P.R.	-	-	9	96	153	327	-	-	-	-	-	-
V.I.	-	-	-	-	-	-	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	-	4	-	1	7	15	U	-	U	-	-	1

N: Not notifiable U: Unavailable - no reported cases

*Of 61 cases among children aged <5 years, serotype was reported for 24 and of those, 12 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending April 4, 1998, and March 29, 1997 (13th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997	1998	Cum. 1998	Cum. 1997
UNITED STATES	804	1,117	6	101	137	83	910	1,245	15	105	11
NEW ENGLAND	49	65	-	-	6	3	176	353	-	10	-
Maine	4	7	-	-	-	-	4	6	-	-	-
N.H.	1	5	-	-	-	1	16	40	-	-	-
Vt.	1	2	-	-	-	-	22	119	-	-	-
Mass.	22	39	-	-	1	2	131	173	-	1	-
R.I.	3	2	-	-	4	-	-	11	-	-	-
Conn.	18	10	-	-	1	-	3	4	-	9	-
MID. ATLANTIC	87	102	1	5	17	37	135	113	12	64	5
Upstate N.Y.	24	22	-	2	3	8	78	48	12	64	1
N.Y. City	8	19	-	-	1	-	-	28	-	-	4
N.J.	22	21	-	-	2	-	-	6	-	-	-
Pa.	33	40	1	3	11	29	57	31	-	-	-
E.N. CENTRAL	126	144	2	14	17	2	97	147	-	-	3
Ohio	53	55	2	9	3	2	36	47	-	-	-
Ind.	23	14	-	-	3	-	34	9	-	-	-
Ill.	25	45	-	-	6	-	5	18	-	-	-
Mich.	12	12	-	5	4	-	12	23	-	-	-
Wis.	13	18	-	-	1	-	10	50	-	-	3
W.N. CENTRAL	66	85	1	10	6	2	67	63	1	1	-
Minn.	5	2	-	4	3	2	41	35	-	-	-
Iowa	9	20	1	4	2	-	13	7	-	-	-
Mo.	29	46	-	1	-	-	9	8	1	1	-
N. Dak.	-	-	-	1	-	-	-	1	-	-	-
S. Dak.	5	3	-	-	-	-	2	1	-	-	-
Nebr.	3	4	-	-	1	-	2	2	-	-	-
Kans.	15	10	-	-	-	-	-	9	-	-	-
S. ATLANTIC	146	198	1	18	17	13	81	103	-	2	-
Del.	1	3	-	-	-	-	-	-	-	-	-
Md.	15	24	-	2	1	-	15	54	-	-	-
D.C.	-	5	-	-	-	-	-	2	-	-	-
Va.	15	11	1	3	1	6	6	14	-	-	-
W. Va.	3	6	-	-	-	-	1	3	-	-	-
N.C.	19	39	-	6	5	4	38	18	-	1	-
S.C.	15	31	-	3	1	-	6	4	-	1	-
Ga.	36	32	-	-	2	-	-	2	-	-	-
Fla.	42	45	-	4	7	3	15	6	-	-	-
E.S. CENTRAL	50	81	-	-	11	-	13	31	-	-	-
Ky.	-	20	-	-	-	-	-	9	-	-	-
Tenn.	26	26	-	-	3	-	4	9	-	-	-
Ala.	24	25	-	-	4	-	9	7	-	-	-
Miss.	-	10	-	-	4	-	-	6	-	-	-
W.S. CENTRAL	41	103	-	18	13	4	42	21	2	22	-
Ark.	8	18	-	-	-	1	5	2	-	-	-
La.	16	21	U	-	4	U	-	5	U	-	-
Okla.	17	12	-	-	-	-	6	-	-	-	-
Tex.	-	52	-	18	9	3	31	14	2	22	-
MOUNTAIN	57	73	-	8	7	13	215	230	-	5	-
Mont.	2	4	-	-	-	-	1	2	-	-	-
Idaho	2	5	-	-	2	6	110	131	-	-	-
Wyo.	3	-	-	1	-	-	-	3	-	-	-
Colo.	13	18	-	1	2	1	29	70	-	-	-
N. Mex.	10	13	N	N	N	-	47	11	-	1	-
Ariz.	21	16	-	2	-	4	17	9	-	1	-
Utah	5	8	-	-	1	2	8	1	-	2	-
Nev.	1	9	-	4	2	-	3	3	-	1	-
PACIFIC	182	268	1	28	43	9	84	184	-	1	3
Wash.	24	26	-	4	3	9	73	75	-	-	-
Oreg.	38	58	N	N	N	-	8	5	-	-	-
Calif.	117	181	-	14	29	-	-	98	-	-	1
Alaska	1	1	-	2	2	-	-	2	-	-	-
Hawaii	2	2	1	8	9	-	3	4	-	1	2
Guam	-	1	U	-	1	U	-	-	U	-	-
P.R.	1	6	-	2	4	-	2	-	-	-	-
V.I.	-	-	U	-	-	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	-	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending April 4, 1998 (13th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	634	466	98	37	18	15	57
Boston, Mass.	155	105	30	8	6	6	17
Bridgeport, Conn.	48	34	8	4	2	-	1
Cambridge, Mass.	16	12	3	1	-	-	1
Fall River, Mass.	29	24	4	1	-	-	-
Hartford, Conn.	56	40	8	4	1	3	-
Lowell, Mass.	19	15	4	-	-	-	5
Lynn, Mass.	11	7	3	-	1	-	1
New Bedford, Mass.	21	18	1	2	-	-	4
New Haven, Conn.	35	26	4	2	3	-	3
Providence, R.I.	79	57	14	3	3	2	2
Somerville, Mass.	6	4	1	1	-	-	-
Springfield, Mass.	76	56	10	6	1	3	7
Waterbury, Conn.	25	19	1	3	1	1	3
Worcester, Mass.	58	49	7	2	-	-	13
MID. ATLANTIC	2,360	1,649	452	183	39	37	126
Albany, N.Y.	56	46	6	4	-	-	2
Allentown, Pa.	20	16	2	1	1	-	-
Buffalo, N.Y.	58	46	7	3	1	1	-
Camden, N.J.	34	20	9	3	-	2	2
Elizabeth, N.J.	34	25	5	3	-	1	-
Erie, Pa.	40	34	6	-	-	-	2
Jersey City, N.J.	43	29	8	5	-	1	3
New York City, N.Y.	1,171	790	234	106	21	20	41
Newark, N.J.	71	30	19	18	1	3	1
Paterson, N.J.	18	6	8	3	-	1	-
Philadelphia, Pa.	400	279	82	24	10	5	31
Pittsburgh, Pa.§	84	60	15	5	3	1	9
Reading, Pa.	30	25	4	1	-	-	3
Rochester, N.Y.	116	95	19	1	-	1	17
Schenectady, N.Y.	34	25	8	-	1	-	3
Scranton, Pa.	19	17	1	1	-	-	1
Syracuse, N.Y.	90	72	13	3	1	1	7
Trenton, N.J.	24	17	5	2	-	-	4
Utica, N.Y.	18	17	1	-	-	-	-
Yonkers, N.Y.	U	U	U	U	U	U	U
E.N. CENTRAL	2,061	1,433	394	146	44	44	132
Akron, Ohio	51	40	7	2	2	-	-
Canton, Ohio	23	20	2	1	-	-	3
Chicago, Ill.	362	223	88	33	11	7	27
Cincinnati, Ohio	117	84	20	8	2	3	13
Cleveland, Ohio	142	93	32	11	1	5	3
Columbus, Ohio	162	112	26	18	2	4	16
Dayton, Ohio	133	109	14	6	1	3	13
Detroit, Mich.	195	119	48	17	5	6	9
Evansville, Ind.	44	34	8	1	-	1	3
Fort Wayne, Ind.	60	44	12	3	-	1	3
Gary, Ind.	14	8	5	1	-	-	-
Grand Rapids, Mich.	63	45	12	3	2	1	5
Indianapolis, Ind.	215	148	40	19	5	3	-
Lansing, Mich.	44	34	8	2	-	-	9
Milwaukee, Wis.	121	81	25	7	3	5	7
Peoria, Ill.	42	35	5	-	-	2	5
Rockford, Ill.	54	32	14	7	1	-	3
South Bend, Ind.	35	30	3	1	1	-	2
Toledo, Ohio	115	86	23	3	-	3	8
Youngstown, Ohio	69	56	2	3	8	-	3
W.N. CENTRAL	663	475	110	36	17	16	51
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	31	25	4	1	1	-	2
Kansas City, Kans.	23	15	4	3	1	-	1
Kansas City, Mo.	102	58	22	5	5	3	6
Lincoln, Nebr.	34	29	3	-	1	1	3
Minneapolis, Minn.	144	111	22	5	3	3	8
Omaha, Nebr.	61	39	16	2	2	2	11
St. Louis, Mo.	102	69	23	7	1	2	7
St. Paul, Minn.	83	71	2	7	-	3	10
Wichita, Kans.	83	58	14	6	3	2	3
S. ATLANTIC	1,152	786	202	104	30	28	85
Atlanta, Ga.	U	U	U	U	U	U	U
Baltimore, Md.	213	122	47	30	7	5	20
Charlotte, N.C.	76	54	12	7	1	2	13
Jacksonville, Fla.	124	90	18	12	2	2	2
Miami, Fla.	102	58	29	11	4	-	1
Norfolk, Va.	39	29	5	4	-	1	6
Richmond, Va.	82	62	10	5	4	1	10
Savannah, Ga.	53	40	6	4	3	-	6
St. Petersburg, Fla.	68	52	8	4	1	3	8
Tampa, Fla.	235	179	34	12	3	7	16
Washington, D.C.	149	91	31	15	5	7	3
Wilmington, Del.	11	9	2	-	-	-	-
E.S. CENTRAL	944	654	183	57	20	27	71
Birmingham, Ala.	196	129	48	10	3	3	12
Chattanooga, Tenn.	94	68	15	7	2	2	4
Knoxville, Tenn.	102	77	14	7	1	3	16
Lexington, Ky.	75	49	14	8	2	2	9
Memphis, Tenn.	213	141	44	17	6	5	21
Mobile, Ala.	89	70	12	-	3	4	1
Montgomery, Ala.	52	44	4	2	-	2	2
Nashville, Tenn.	123	76	32	6	3	6	6
W.S. CENTRAL	1,520	997	297	138	46	41	100
Austin, Tex.	80	54	14	7	2	3	5
Baton Rouge, La.	43	26	10	4	2	1	-
Corpus Christi, Tex.	48	30	9	5	3	1	5
Dallas, Tex.	211	119	50	21	10	11	3
El Paso, Tex.	61	46	8	3	1	3	6
Ft. Worth, Tex.	125	83	25	12	3	2	8
Houston, Tex.	360	232	72	44	6	6	36
Little Rock, Ark.	109	68	22	9	3	6	8
New Orleans, La.	108	70	24	7	6	1	-
San Antonio, Tex.	226	164	40	16	5	1	16
Shreveport, La.	40	28	6	2	3	1	3
Tulsa, Okla.	109	77	17	8	2	5	10
MOUNTAIN	912	621	167	79	26	17	63
Albuquerque, N.M.	93	60	22	7	2	2	3
Boise, Idaho	37	26	8	-	1	2	-
Colo. Springs, Colo.	50	39	3	6	2	-	8
Denver, Colo.	96	64	18	10	1	3	17
Las Vegas, Nev.	219	143	52	18	5	-	9
Ogden, Utah	31	25	3	2	1	-	-
Phoenix, Ariz.	64	42	13	5	1	2	1
Pueblo, Colo.	29	19	8	1	1	-	4
Salt Lake City, Utah	110	60	14	20	11	5	14
Tucson, Ariz.	183	143	26	10	1	3	7
PACIFIC	1,733	1,253	295	109	38	37	107
Berkeley, Calif.	25	17	6	2	-	-	3
Fresno, Calif.	70	51	8	8	2	1	6
Glendale, Calif.	23	18	4	-	-	1	1
Honolulu, Hawaii	93	70	15	7	-	1	8
Long Beach, Calif.	53	30	14	6	-	3	10
Los Angeles, Calif.	457	336	76	29	10	6	40
Pasadena, Calif.	11	7	3	-	-	1	1
Portland, Oreg.	143	99	29	9	5	1	7
Sacramento, Calif.	216	155	39	15	2	5	42
San Diego, Calif.	155	105	31	9	6	3	22
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	162	114	31	9	3	5	17
Santa Cruz, Calif.	29	22	5	1	1	-	4
Seattle, Wash.	136	96	17	10	4	9	4
Spokane, Wash.	55	45	7	1	2	-	20
Tacoma, Wash.	105	88	10	3	3	1	12
TOTAL	11,979¶	8,334	2,198	889	278	252	882

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

Contributors to the Production of the *MMWR* (Weekly)

Weekly Notifiable Disease Morbidity Data and 122 Cities Mortality Data

Samuel L. Groseclose, D.V.M., M.P.H.

State Support Team

Robert Fagan
Karl A. Brendel
Siobhan Gilchrist, M.P.H.
Harry Holden
Gerald Jones
Felicia Perry
Carol A. Worsham

CDC Operations Team

Carol M. Knowles
Deborah A. Adams
Willie J. Anderson
Christine R. Burgess
Patsy A. Hall
Myra A. Montalbano
Angela Trosclair, M.S.

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format and on a paid subscription basis for paper copy. To receive an electronic copy on Friday of each week, send an e-mail message to *listserv@listserv.cdc.gov*. The body content should read *SUBscribe mmwr-toc*. Electronic copy also is available from CDC's World-Wide Web server at *http://www.cdc.gov/* or from CDC's file transfer protocol server at *ftp.cdc.gov*. To subscribe for paper copy, contact Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 512-1800.

Data in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the following Friday. Address inquiries about the *MMWR* Series, including material to be considered for publication, to: Editor, *MMWR* Series, Mailstop C-08, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333; telephone (888) 232-3228.

All material in the *MMWR* Series is in the public domain and may be used and reprinted without permission; citation as to source, however, is appreciated.

Acting Director, Centers for Disease Control and Prevention
Claire V. Broome, M.D.

Acting Deputy Director, Centers for Disease Control and Prevention
Stephen B. Thacker, M.D., M.Sc.

Acting Director, Epidemiology Program Office
Barbara R. Holloway, M.P.H.

Acting Editor, *MMWR* Series
Andrew G. Dean, M.D., M.P.H.

Managing Editor, *MMWR* (weekly)
Karen L. Foster, M.A.

Writers-Editors, *MMWR* (weekly)
David C. Johnson
Teresa F. Rutledge
Lanette B. Wolcott

Desktop Publishing and Graphics Support
Morie M. Higgins
Peter M. Jenkins

☆U.S. Government Printing Office: 1998-633-228/67067 Region IV

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention (CDC)
Atlanta, Georgia 30333

Official Business
Penalty for Private Use $300
Return Service Requested

FIRST-CLASS MAIL
POSTAGE & FEES PAID
PHS/CDC
Permit No. G-284

9602 93036 980409 0001
UNIVERSITY MICROFILMS
SERIALS ACQUISITION DEPT
300 NORTH ZEEB ROAD
ANN ARBOR MI 48103-1553